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PROBLEMS FOR SOLUTION.

ALGEBRA.

333. Proposed by R. D. CARMICHAEL, Princeton University.

Sum the infinite series

$$\frac{1}{(m+1)^2}+\frac{(2m-1)}{(2m+1)^2}+\frac{(3m-1)^2}{(3m+1)^4}+\frac{(4m-1)^3}{(4m+1)^5}+\frac{(5m-1)^4}{(5m+1)^6}+\ldots$$

334. Proposed by G. B. M. ZERR. A. M., Ph. D., Philadelphia, Pa.

Sum the series, $2^n-n\,2^{n-2}+\frac{n(n-3)}{2!}2^{n-4}-\frac{n(n-4)(n-5)}{3!}2^{n-6}$

$$+\frac{n(n-5)(n-6)(n-7)}{4!}2^{n-8}-\frac{n(n-6)(n-7)(n-8)(n-9)}{5!}2^{n-10}+\ldots$$

GEOMETRY.

362. Proposed by V. M. SPUNAR, M. and E. E., 3536 Massachusetts Avenue, N. S., Pittsburg, Pa.

Show that the focus of an ellipse may be regarded as an indefinitely small circle having double contact with the ellipse, the directrix being the chord joining the points of contact.

363. Proposed by G. I. HOPKINS, Manchester, N. H.

Construct the triangle, having given, base, vertical angle, and difference between altitude and sum of the other two sides.

364. Proposed by R. C. ARCHIBALD, Providence, R. I.

Between the side of a given rhombus and its adjacent side produced, to insert a straight line of a given length and directed to the opposite corner. [''Euclidean constructions'' are particularly desired.]

CALCULUS.

290. Proposed by C. N. SCHMALL, New York City.

When the equation $ax^2+2hxy+by^2+2gx+2fy+c=0$, represents an ellipse, show (by integration) that its area is

$$\frac{\pi\,(af^2+bg^2+ch^2-abc-2fgh)}{(ab-h^2)^{\frac{3}{2}}}.$$

291. Proposed by V. M. SPUNAR, M. and E. E., Pittsburg, Pa.

Integrate $\frac{dy}{dx}=ay^2+bx^m$.

MECHANICS.

244. Proposed by G. B. M. ZERR, A. M., Ph. D., Philadelphia, Pa.

A load P is supported by three strings of equal size lying in the same plane. The middle string is vertical, one string makes with it the angle θ on one side, and the second string makes with it the angle ϕ on the other side. Find the stresses in the strings.

245. Proposed by J. SCHEFFER, A. M., Hagerstown, Md.

A body moves with constant velocity in the circumference of an ellipse. Find the rate of approach (1) to the center, (2) to one of the foci, for any point in the ellipse.

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NOTES AND NEWS.

It is desired to include in this column notes of interest concerning the activities of teachers of college mathematics in the field of education. The editors will gladly receive news of this kind from any source. Such items may be transmitted to any one of the three editors.

Columbia University announces that several new officers of instruction will be added to the Department of Mathematics at the close of the present academic year.

Professor S. C. Newson, of the Department of Mathematics in the University of Kansas, died suddenly at his home on Thursday evening, February 17, 1910.

Professor Granville's paper in the present number is the second in the series on the teaching of college mathematics. The next paper in this series will be by Professor H. L. Rietz, of the University of Illinois, on the Teaching of College Algebra.

A series of five lectures on graphical methods in the teaching of mathematics will be given at the University of Michigan during February, by Professor Carl Runge of Goettingen, Germany, who is Kaiser Wilhelm Exchange Professor at Columbia University during the present year. The titles include: Methods of graphical calculation; Graphical representation of functions, Graphical integration and differentiation, Graphical treatment of differential equations.

Mr. R. M. Ginnings, formerly of Kirksville Normal School, Missouri, is professor of mathematics in the State Normal School at Macomb, Illinois. Mr. Ginnings had recently completed a year's graduate study, on leave of absence from Kirksville, and had attained the Master's degree in mathematics.

Professor R. L. Rhoton of Georgetown College, Kentucky, is chairman of a committee of the State Teachers' Association to revise the course of study in mathematics in the Schools of Kentucky.

Mr. E. E. Whitford, Tutor in Mathematics in the College of the City of New York, is the author of an article in the January number of *School Science and Mathematics* entitled: "An American Syllabus in Algebra," in which the results of the various algebra syllabi of recent years are summed up in tabular form for convenient reference.